# Ranplan Introduction

- **What we do - Ranplan** offers:
  - **The leading indoor wireless network planning tool**
  - **The world's first** combined indoor-outdoor wireless planning tool
  - **Multiple radio access technologies: 4G (LTE)**, **5G mobile networks, WiFi, Public Safety wireless**, **IoTs**

- **Where we are –** Ranplan operates out of four offices world-wide with the **main R&D team in Cambridge**, UK.

- **Ranplan** is listed on NASDAQ First North.





The winner of 2020 Small Cell Awards in **Software and Services**

The judging panel's verdict: "Automation of small cell networks is critical to the business case and Ranplan's offering stood out for its versatility and the flexibility of its cloud-based platform."

At **INTEROP 2019**, we won the Judges' Special Prize in the **'Best of Show Award'** for our world leading 5G NR planning capability.
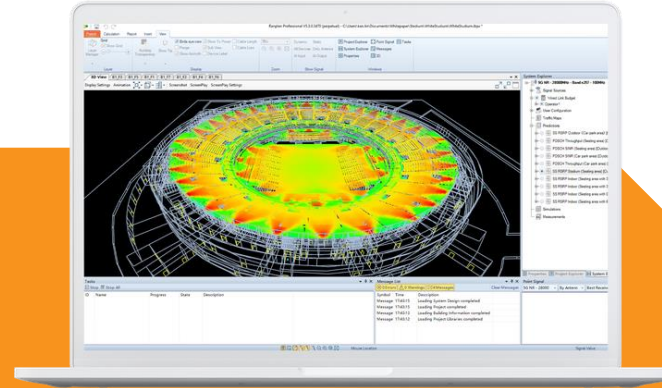
# O-RAN in Ranplan
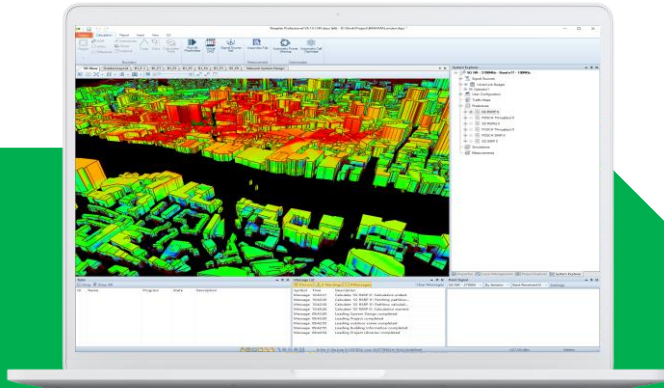


## Ranplan Professional

Powerful planning platform to simultaneously design in-building and outdoor wireless networks.

Ideal for large environments and enterprise buildings, university campuses, stadiums and shopping centres.
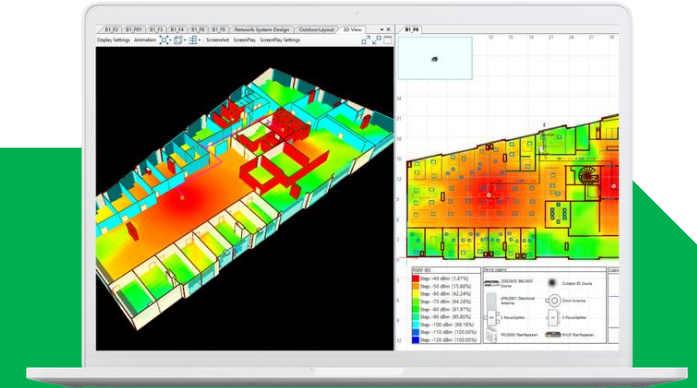
## Ranplan Professional

Support multi-brands O-RAN devices

Support different O-RAN devices, including RU, DU, and CU

Ideal for large and complex O-RAN network design.

## Ranplan Professional

Support multi wireless network system KPIs prediction.

Ideal for network planning and design.

# VALUES BROUGHT BY RANPLAN IN THE DSIT CALL

- Digital twin of ORAN device operating environments

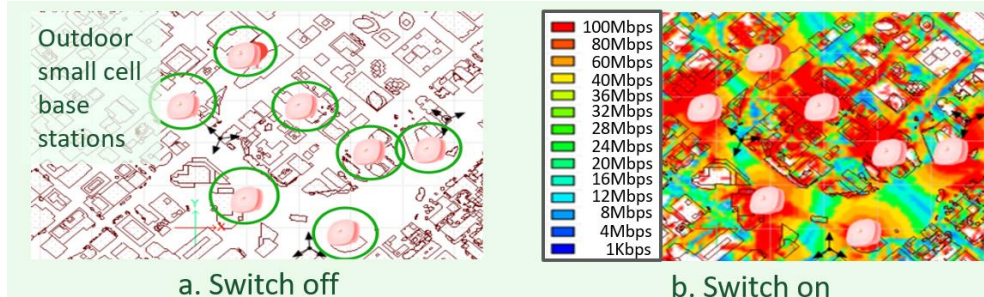- Ray- and/or AI-based radio propagation engine implemented as an rApp/xApp on RIC



Indoor+outdoor environment model
+
AI-augmented ray-based channel model
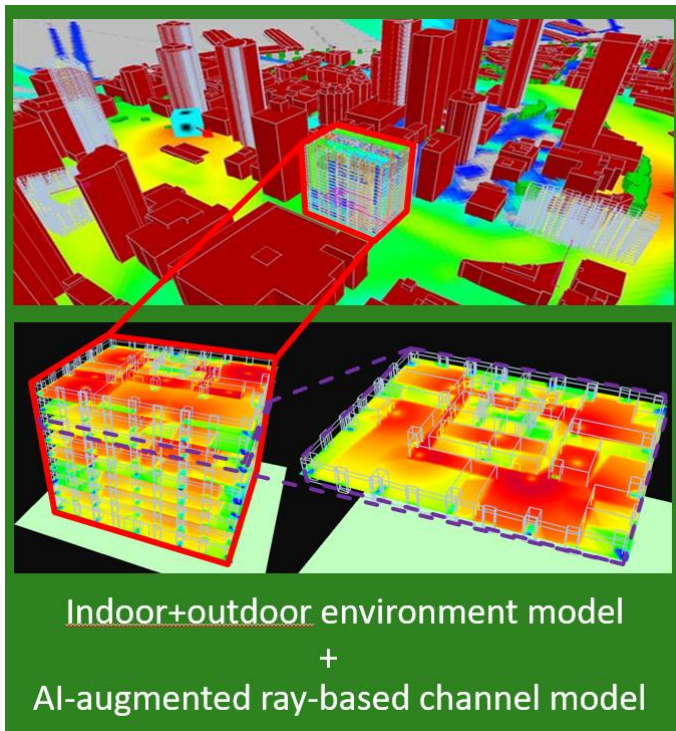
- Network optimisation on RIC:
  - Load balancing
  - Massive MIMO beamforming
  - Small cell switch on/off to save energy



a. Beamforming     b. Beam tracking          c. Handover

**Environment and channel modelling enable beamforming optimisation**

*i*) Reduce 99% interference in respect to omni-directional coverage.
*ii*) Save 30% energy in respect to stand-alone beamforming.



Outdoor small cell base stations

100Mbps
80Mbps
60Mbps
40Mbps
36Mbps
32Mbps
28Mbps
24Mbps
20Mbps
16Mbps
12Mbps
8Mbps
4Mbps
1Kbps

a. Switch off                    b. Switch on

**Automatic on/off switching of small cells to save energy**

Automatically switch on/off small cells according to data analytics to reduce $CO_2$ emission by 50% and OPEX.

# CONTACT AND ADDITIONAL INFO

- Contact

    - Email: Jie.zhang@ranplanwireless.com

    - Tel.: +44 1223 606 756

- Additional information

    - A short video on massive MIMO and indoor-outdoor radio network planning: https://youtu.be/VcZemnjyDWI

    - A short video on Private Wireless network planning https://www.ranplanwireless.com/gb/applications/private-networks/

    - Webinars: https://www.ranplanwireless.com/gb/resources/?type=webinar

    - Web site: https://www.ranplanwireless.com/

    - Whitepapers on 5G and CBRS-based LTE planning: https://www.ranplanwireless.com/gb/resources/?type=whitepaper

- More short videos

    - **HetNet**
    https://vimeo.com/501732209
    - **Tunnel**
    https://vimeo.com/484028322

    - **Stadium**
    https://vimeo.com/509939808

RanPlan
WIRELESS